Nutrition as primary therapy in IBD

Dr Clare Donnellan
Leeds General Infirmary
Case

- GB

- 34 year old female

- Diagnosed with Crohn’s in 2002
  - ? Extent
  - Offered steroids or surgery
  - Declined both...
Represented in February 2010

- 12 kg weight loss
- Lower abdominal pain
- Fevers and sweats
- Loose stool
GB

➤ Examination

- Toxic and unwell
- Pyrexial
- Tender abdomen
- Not peritonitic
GB

- **Bloods**
  - Hb 9.1, MCV 72
  - WBC 15, Neut 10.5
  - Plt 750
  - CRP 220
  - Normal U&E, LFT
  - Blood cultures –ve
  - CXR/AXR unremarkable


**Issues**
- Active Crohn’s disease
- Abscess

**Treatment options**
- Antibiotics
- Top down therapy
  - Infliximab, azathioprine
- Step up therapy
  - Steroids – azathioprine - infliximab
GB

- Agreed to antibiotics
- Refused steroids
- Agreed to azathioprine
- Only option to ‘bridge’ was enteral nutrition
GB

- Weight 73 kg, BMI 26.1
- Requirements 1887 kcal, 85 g protein
- Started on Fortisips/Fortijuce
- Changed to Modulen IBD
GB

- Also given intravenousous antibiotics
- Pain settled
- Pyrexia settled
- Blood tests normalised
- D/C after 2/52 of antibiotics
History of EN

- Voikt 1973, Archives of Surgery
- Logan 1981, Gut

Since then
- Multiple trials
- Multiple meta-analyses…..
- Still unanswered questions
Mechanism of action

➢ As therapy, EN improves

- Intestinal permeability
- Inflammatory markers
- Mucosal healing
- Alteration of faecal flora

Benefits of Enteral Nutrition (EN)

- Need to distinguish
  - Primary therapy
  - Treating / preventing malnutrition

- Which patients should be considered?
  - Small bowel disease
  - Mild disease
  - Recent onset?

Travis et al. Gut 2006 (ECCO)
Benefits of EN

- Remission in approx 50-60% at 4-8/52
  - No studies vs. placebo
  - No studies comparing 4 vs. 6 vs. 8/52
  - Only comparison is against steroids
Induction of remission – steroids vs. EN

Zachos et al. Cochrane Review 2007
Induction of remission – steroids vs. EN (high quality studies)

Zachos et al. Cochrane Review 2007
Type of feed

- Elemental
- Semi-elemental
- Polymeric
Induction of remission – Elemental vs. Polymeric
Enriched feeds

- **TGF-β**
  - Animal models
  - Children with Crohn’s

- **Small case series**
  - Improvement in 20/29\(^1\)
  - Remission in 21/33\(^2\)
  - Used as a ‘bridge’ to MTX or 6MP in 9/13\(^3\)

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\(^1\) Triantafillidis et al. Annals of Gastroenterology, 2006;
\(^2\) Chiang et al. Gut abstract, 2009;
\(^3\) Demetriou et al. Gut abstract, 2008
Clinic review at 1/12
- Much better
- Abdominal pain resolved
- No pyrexias

Repeat scan at 2/12
Abscess resolved

But unkeen for infliximab

Plan to continue Modulen for 12/52 as a bridge to azathioprine
GB

Clinic review June 2010
- Aim to reduce Modulen

Clinic review July 2010
- Pain increased
- Keen to stay on Modulen ‘long-term’
- Issues about body image…..
EN for maintenance

- Non-RCT data
  - Supplementary EN prolonged remission and improved growth
    - Nocturnal NG
    - Oral nutrition supplements

References:
EN for maintenance

2 RCTs

- Verma et al. Scan J Gastro 2001
  - Steroid-dependent disease
  - Adjuvant nutrition (elemental vs. polymeric)
  - 14/27 patients stopped steroids

- Takagi et al. APT 2006
  - Half-elemental vs. normal diet
  - Relapse 34.6% vs. 64% at 11.9 months
  - Hazard ratio 0.4 (95% CI 0.16-0.98)

Akobeng & Thomas, Cochrane Review 2007
EN for post-surgery prophylaxis

1 study

- 40 patients:
  - 20 nocturnal EN and low fat diet
  - 20 normal

- Clinical recurrence at 1 year
  - 1 vs. 7 (p=0.048)

- Endoscopic recurrence
  - 5 vs. 8 at 6m (p=0.5)
  - 6 vs. 14 at 1 year (p=0.027)
Other dietary modifications

- Omega 3 fatty acids and CD relapse

### Omega 3 fatty acids (fish oil) for maintenance of remission in Crohn’s disease

**Comparison:** 1 Omega-3 versus placebo  
**Outcome:** 1 Relapse rate at one year (all studies)

<table>
<thead>
<tr>
<th>Study or subgroup</th>
<th>Treatment n/N</th>
<th>Control n/N</th>
<th>Weight</th>
<th>Risk Ratio M-H,Random,95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Belluzzi 1996</td>
<td>11/39</td>
<td>27/39</td>
<td>12.0%</td>
<td>0.41 [0.24, 0.70]</td>
</tr>
<tr>
<td>Lorenz-Meyer 1996</td>
<td>40/70</td>
<td>36/65</td>
<td>21.4%</td>
<td>1.03 [0.77, 1.39]</td>
</tr>
<tr>
<td>Belluzzi 1997</td>
<td>2/26</td>
<td>5/24</td>
<td>2.2%</td>
<td>0.37 [0.08, 1.73]</td>
</tr>
<tr>
<td>Romano 2005</td>
<td>11/18</td>
<td>19/20</td>
<td>17.6%</td>
<td>0.64 [0.44, 0.94]</td>
</tr>
<tr>
<td>Feagan 2008</td>
<td>54/183</td>
<td>62/180</td>
<td>21.2%</td>
<td>0.86 [0.63, 1.16]</td>
</tr>
<tr>
<td>Feagan 2008_EPIC 2</td>
<td>84/187</td>
<td>94/188</td>
<td>25.6%</td>
<td>0.90 [0.73, 1.11]</td>
</tr>
</tbody>
</table>

**Total (95% CI)**:  
- **Total events:** 202 (Treatment), 243 (Control)  
- **Heterogeneity:** $\tau^2 = 0.05$; $\chi^2 = 12.01$, df = 5 ($P = 0.03$); $I^2 = 58\%$  
- **Test for overall effect:** $Z = 2.16$ ($P = 0.031$)  
- **Risk Ratio M-H,Random,95% CI:** 0.77 [0.61, 0.98]
Other dietary modifications

- Omega 3 fatty acids
  - 6 studies
  - 3 small benefit
  - Significant publication bias
  - Significant heterogeneity
  - No real effect

Other dietary modifications

- Omega 3 fatty acids and UC relapse
  - 3 studies
  - No difference compared to placebo
  - None used enteric coating....

Other dietary modifications

- Probiotics
  - No evidence for:
    - Induction of remission
    - Maintenance of remission
    - (Evidence in pouchitis)

What is the role for parenteral nutrition (PN)?

- NO ROLE for ‘bowel rest’

- Useful if functional intestinal failure
  - Lots of intestinal fistulae
  - Short bowel syndrome due to multiple resections
What is the role for parenteral nutrition (PN)?

- May be helpful pre-operatively
  - If > 10% weight loss in previous 3/12

- But always better to use gut
  - Enteral and parenteral nutrition

ESPEN guidelines, 2009
Summary

- EN has role
  - For induction of remission
  - For maintenance
  - Drop-out 10-20% in trials

- Patient selection important
- Paediatric patients most benefit

- Need RCTs to determine role for enriched feeds